THE MINERAL INDUSTRY OF

GERMANY

By Harold R. Newman

In 1997, the economy of Germany improved. Stronger export demand from outside Western Europe, an improvement in German competitiveness, productivity increases, and a lower exchange rate were contributing factors in the economic growth. The gross domestic product (GDP) showed about a 2.3% growth rate, which was an improvement over the 1.4% GDP of 1996. Germany remained the largest economy in Europe and accounted for more than 25% of the European Union's (EU) economy. Unemployment during the year averaged about 10%. The eastern States of the former German Democratic Republic (GDR) are now an integral part of Germany and are being raised to the economic standards of West Germany as quickly as possible. The economic restructuring process was in full swing. The complete reorganization of the economy in the new Federal States has entailed the elimination of many unproductive and unprofitable economic structures left behind by the former centrally planned system. It has understandably been a painful experience for many people. The former GDR is still dependant upon huge net resource transfers from the west via a variety of Federal and State social payments, entitlement and investment grants, and tax waiver incentives for investment and trade (Bureau of Economic and Business Affairs, 1997).

Government Policies and Programs

The German Government's policies were concerned with fighting inflation, lowering unemployment, increasing the country's international competitive status, and safeguarding the environment. The agency responsible for privatizing the GDR State holdings, the Treuhandanstalt (Trustee Agency), ceased to exist after privatizing or closing a significant number of operations. The remaining properties were transferred to the Beteiligungs Management Gesellschaft GmbH (Interest Management Association).

Ever since it was founded Germany (formerly the Federal Republic of Germany) has long been one of the main advocates of European unification, including monetary union. In harmony with the Schengen Agreement which became effective on March 26, 1995, most of the EU member states, including Germany, have agreed to discontinue border controls. This internal market should provide a boost for European economies, including Germany's export-oriented economy.

Environmental Issues

The environment in Germany is the responsibility of the Federal Ministry for the Environment, Water Conservation and Nuclear Safety. The Ministry's policy is based on the following principles: Prevention—New projects are to be developed in such a way as to avoid pollution or damage as much as possible. The polluter pays—It is not the public at large, but those causing the damage or pollution who bear the responsibility and cost; and Cooperation—The government, the business community, citizens, and groups in society join forces to solve environmental problems because every individual is responsible for the environment (Bundesregierung Deutschland, 1997, Environmental policy, accessed March 17,1998,at URL http://www.bundesregierung.de/ausland/economy/econ0702.html).

Environmental concerns that relate to mining, are addressed under the Federal mining law, and its provisions for environmental impact assessments that must be completed before mining can start. The objective of the assessment is to identify and evaluate of all environmental consequences of a planned project, taking into account various design options. The environmental evaluation process in Germany, as in other countries, presents a risk for the company involved because even after completion of the assessment, which usually involves considerable time and resources, project approval is not guaranteed.

Under provisions of the Federal mining law, the following are required in conjunction with the assessment:

- Description of the expected environmental consequences;
- Data to support identification and estimation of the consequences;
- Description of the preventive measures for avoidance, reduction, equalization, or substitution of the consequences;
- Data concerning the environment and its components;
- Data on alternatives to the planned project; and
- Difficulties associated with gathering the necessary data.

The largest percentage of environmental funds were spent on clean air and water-quality protection. Expenditures on noise reduction, transport of hazardous materials, and the treatment and decontamination of polluted sites were also large.

Production

The minerals and metals industry, which includes the industrial processing industry, construction industry, and mining industry, contributed almost 1% to the GDP. Production in the mining and metals industries, as in other industries, depends on a variety of forces, including availability of materials and supply and demand. The easing of the worldwide recession was a positive factor for those industries that depend on exporting their products. *(See table 1.)*

The high costs of production in Germany compared with those of competing foreign producers and the problems caused by trying

to balance production between the merged eastern and western States helped constrain production. To maintain and increase production and activity, producers and labor unions worked to restructure the traditional work rules that were regarded by some as a restrictive factor in the expansion of the industry. Labor unions agreed to smaller or no real wage increases in 1996, and the trend continued in 1997 (Bureau of Economic and Business Affairs, 1997).

Trade

Foreign trade is a key element in Germany's economic life. After the United States, Germany has the largest foreign trade volume in the world. In 1997, exports amounted to $528.2 billion and imports totaled $445.7 billion, resulting in a foreign trade surplus for the first time since German reunification on October 6, 1990. One out of every four German jobs depended on exports (Deutschland Magazine, 1998).

France, at 10.8%, was the major supplier of goods to Germany. The United States, at 7.3% was fourth largest supplier. The United States had a positive trade balance of $5.6 million with Germany (Bureau of Economic and Business Affairs, 1997).

Germany, a major processing nation, relied mainly on imports to feed the metals processing industry, which transformed raw materials into products that supplied the manufacturing industry, which provided the bulk of the country's exported materials. Table 2 shows a balance of payments of selected commodities. During 1996, the latest year for which data were available, principal export destinations and the principal import sources, based on value, were other EU countries. (*See tables 3 and 4.*)

Structure of the Mineral Industry

The structure of the industry in Germany and the principal companies operating in the production and processing of metals and minerals are shown in table 5. The restructuring and privatization of the facilities in the eastern States continued in 1997. The Interest Management Association retained control of some of the eastern States' companies until they were sold or closed. Most of the producing and processing facilities still in operation in the eastern States were small compared with those in the western States, except for lignite and potash, both of which were very large operations.

Commodity Review

Metals

Aluminum.—In 1997, Germany's primary aluminum industry was the largest in the EU, although it was considered to be medium-sized when compared with other world producers. Increased demand and increased price of aluminum resulted in an increase in production. VAW Aluminum AG, a member of the VIAG Group, accounted for more than 75% of the country's primary aluminum production.

VAW's wholly owned aluminum smelters in Germany and its participating interests in smelters abroad ensured the supply of input metal to the company's downstream fabricating operations. With sales of $3.2 billion and a workforce of 12,600, the Group had a strong presence in the European market (VAW Aluminum AG, 1997, Short portrait, accessed December 30, 1997 at URL http://www.vaw.com/Link4B.htm).

Reynolds Metals of the United States was to sell its European rolling mill operations to VAW after agreement on when and the price was decided. The operations being sold include Reynolds Aluminum Deutschland, in Hamburg; Reynolds Italy, in Cisterna; and Industria Navarro del Alamayn, in Irunzun, Spain (Financial Times, 1997).

Lead.—Metallgesellschaft AG, Frankfurt, transferred ownership of its Austrian secondary lead unit, BMG Metall und Recycling GmbH, to its metals holding company, Rheinische Zinkgesellschaft GmbH, Duisburg, as another step in the restructuring of its metals division. All the group's secondary lead plants are now grouped together, which was expected to facilitate greater cooperation among them. The metals group also includes electrolytic zinc production and zinc semifabricating operations in Germany.

Metaleurop Weser Blei GmbH's Nordenham ISA lead refinery was operating at its full capacity of 90,000 metric tons per year (t/yr) after modifications to the new bath technology and resolution of some technical problems. (Mining Journal, 1997).

Steel.—Two of Germany's largest steel companies, Thyssen Stahl AG and Fried. Krupp AG Hoesch-Krupp signed a memorandum of understanding for a merger that would create a new joint company, Thyssen-Krupp Stahl. This company was expected to have annual sales of more than $36 billion and an output of more than 15 million metric tons per year (Mt/yr). This agreement would create the world's fifth largest steel company and the third largest in Europe, after British Steel Plc. of the United Kingdom and Usinor Sacilor of France. This could open the way for a major reshaping of the German and European steel industry (BT Commodities, 1997 Thyssen, Krupp to merge steel units, accessed January 13, 1998, at URL http://www.asia.com.sg/btcommo/news26_3.htm).

Preussag Stahl AG is one of Germany's largest steel producers. In addition to flats and beams, Preussag also supplies specially welded large pipes for long-distance petroleum and natural gas pipelines. The new Preussag Stahl AG electric steel works was brought on line in Peine in May 1997 and has a capacity of 750,000 t/yr. The electric steel works, built to advanced technological standards, replaced the previous converter steel works, which had provided the rolling mill in Peine with material since 1964. During the course of the converter steel works operation, three converters produced more than 34 million metric tons of crude steel in some 380,000 melts. Production at the former converter steel works was shut down in mid-1996 (Preussag Stahl AG, 1997, accessed January 20, 1998, at URL http://www.preussag.de/engl/archiv/magazin/etstahl.html).

Industrial Minerals

Cement.—The Treuhandanstalt sold the former GDR's cement operations mostly to either German or other Western European companies. A number of these plants were being extensively

modernized. Cement demand had increased significantly; so, companies were upgrading their plants for more cost-efficient production.

Clays.—Between 140 and 160 small to medium-sized clay mines were in operation at one time in Germany. About one-half of the high-quality refractory and ceramic clays produced in Germany were from the Rhineland-Palatinate area. Production in Bavaria was concentrated in the Oberfalz area.

Bentonite was almost exclusively mined in Bavaria. Süd-Chemie AG, in Moosburg, was the largest bentonite producer in Western Europe. The second largest company was Erbslöh Geisenheim Industrie GmbH, in Geisenheim. About 30% of the bentonite production was exported for use by the drilling, construction, foundry, and water purification industries.

Germany was the second largest producer of kaolin in Western Europe after the United Kingdom. Still, the country imported about 50% of its requirements of high-quality paper-coating-grade kaolins. Most of the German kaolin was mined in Bavaria and Amberger Kaolinwerke GmbH was the largest producer, with mines in Hirschau.

Graphite.—Graphitwerk Kropfmühl AG was the only natural graphite mining and processing company in Germany. The company operated a mine and plant at Kropfmühl, Passau, and a plant at Werk Wedel, Holstein. About one-half of the company's production, which has been falling in recent years because of declining reserves, went into the European refractory industry.

Gypsum.—Germany is a major European producer of crude gypsum. The largest producer was Gebr. Knauf Westdeutsche Gipswerke GmbH that accounted for more than two-thirds of the gypsum produced. The company operated mines in Bavaria, Baden-Württemberg, Hesse, Saarrland, and Lower Saxony. The second largest producer was Rigips Baustoffwerke GmbH, which operated mines in Baden-Württemberg and Lower Saxony.

Magnesia.—After withdrawing from fused alumina and fused spinel production in recent years, Hüls AG was also withdrawing from fused magnesia production. With a production capacity of 15,000 t/yr of fused magnesia at its Niederkassel plant, Hüls was the world's second largest supplier after Universal Ceramic Materials Plc. of the United Kingdom. Because the world electric-grade fused-magnesia supply market was about 45,000 t/yr, the Hüls withdrawal took out a considerable portion of the world's capacity. The major use of fused magnesia is in ceramic insulators for heating elements.

Potash.—Kali und Salz AG operated 17 mines and plants and, after closings and restructuring, had a potassium chloride production capacity of 4 Mt/yr of which 2 Mt/yr was standard grade and 2 Mt/yr was granular grade. Germany is the world's second largest potash producer after Canada.

Mineral Fuels

The most important energy source in Germany's consumption of primary energy was petroleum with a 40% share of total consumption, followed by natural gas with a 20% share; coal, 15% share; lignite, 13% share; nuclear, 10% share; hydroelectricity and wind power, 1% share each; and miscellaneous sources, such as firewood and waste, with a 1% share. About 30% of Germany's primary energy requirement was satisfied from domestic sources; the remaining 70% was imported (Reuther, 1998).

Coal, Anthracite and Bituminous.—Subsidies that have for so long supported Western Europe's coal industry were gradually being phased out and coal producers will be operating without subsidies by 2000. This is in line with EU policy to eliminate subsidies to industries.

About 77% of hard coal production was from the Ruhr Coalfield where it is mined from seams at depths exceeding 900 meters (m). The coal ranged from anthracite to high-volatile bituminous. The Saar Coalfield was also important, with substantial deposits of bituminous coal. The coal mining industry of Germany is controlled by two companies. The largest is Ruhrkohle AG, a private company, which accounted for more than 85% of total production. The other company, Saarbergwerke AG, accounted for 12% of production and is a state-owned company. One smaller company, Preussag Anthrazit GmbH, accounted for about 3% of production. The brown coal mining industry was controlled almost entirely by Rheinsche Braunkohlenwerke AG, a privately owned company (Coal Age, 1997).

Lignite.—Mining is mainly in the Rheinish area to the west of Cologne and the Lusatian area near Dresden. On a much smaller scale, lignite is mined near Helmstedt. Lignite mining was under less economic pressure than hard coal mining (World Coal, 1997).

The lignite deposit in the Rhine region is the largest single formation in Europe and has considerable domestic importance. Rheinbraun AG was Germany's major lignite producer and mined more than 100 Mt/yr from four open-cast mines—Bergheim, Garzweiler, Hambach, and Inden. The Hambach Mine accounted for one-third of total lignite output in the Rhenish mining area. Electricity generation by the coal-fired power stations of RWE Energie accounted for 85% of Rheinbraun's production (Rheinbraun AG, 1996-97).

Natural Gas.—Ruhrgas AG of Germany signed a 15-year agreement with BP Ltd. of the United Kingdom to supply 15 billion cubic meters of natural gas valued at more than $1 billion beginning in October 1998. The gas will be supplied from BP's North Sea fields and delivered via the Interconnector pipeline currently being constructed from Bacton in the United Kingdom to Zeebrugge in Belgium. Onward transmission to the German border will be via a new pipeline to be built by Distrigaz of Belgium (Oil Online, 1997, German gas supplies secured into the future: accessed December 30, 1997, at URL http://www.oilonline.com/news/igerman.htm).

Infrastructure

Germany had a total of 625,600 kilometers (km) of highways and roads, ranging from the high-speed Autobahn system to undeveloped gravel and packed-dirt country roads. Of the total, the Autobahn consisted of 10,814 km; national highways, 43,786

km; State highways, 99,447 km; and municipal, county, and secondary roads, 471,553 km. The railroad system included 45,468 km of track, about 90% of which is Government owned. Of the total, 44,769 km was 1.435-m standard-gauge track, and 699 km was 1.000-m gauge track. Pipelines included a 3,644-km line for petroleum, 3,964-km line for refined products, and a 97,564-km line for natural gas. Inland waterways and canals consisted of 7,541 km and 31 major ports, with the Kiel Canal serving as an important connection between the Baltic and the North Seas and the Rhein-Main-Danube Canal serving as a connection between the North and the Black Seas. The major maritime ports of Hamburg, Rostock, Bremerhaven, Bremen, and Wihelmshaven, respectively, accounted for about 70% of total merchandise traffic.

Outlook

Germany's economy was expected to expand steadily for the next few years despite the huge burden of unification costs on the national economy. As growth in Germany's international trading partners increases, industrial production is expected to grow to meet the demands for consumer products. Restructuring industries to be more efficient was expected to result in increased unemployment, which, in turn, would cut into the available resources of the Federal Government in the form of payments for unemployment compensation, retraining, and other social costs. This is expected to continue in the short term.

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65180 Wiesbaden, Germany

Bundesanstalt für Geowissenschaft und Rohstoffe
(Federal Institute for Geosciences and Natural Resources)
Stilleweg 2, Postfach 51 01 53
30361 Hannover, Germany

Bundesministerium für Forschung und Technologie
(Federal Ministry for Research and Technology)
Heinemannstrasse 2
53175 Bonn, Germany

Bundesministerium für Wirtschaft, Abteiling III, Energiepolitik, Mineralische Rohstoffe (Federal Ministry for Economics, Section III, Energy Policy and Mineral Raw Materials)
Villemombler Strasse 76
53100 Bonn-Duisdorf, Germany

Deutsches Institut für Wirtschaftsforschung (German Institute for Economic Research)
Köningen-Luise Strasse 5
14195 Berlin (Dahlem), Germany

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TABLE 1
GERMANY: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity		1993	1994	1995	1996	1997 e/
METALS						
Aluminum:						
Alumina, Al_2O_3 equivalent						
Calcined	thousand tons	840	824	750	755 r/	750
Hydrate	do.	1,110	951	994	792	800
Metal:						
Primary		551,933	504,956	575,160	576,422	571,944 3/
Secondary		408,120	438,082	530,990	416,915	432,467 3/
Arsenic, white, Ar_2O_3 content e/		300	250	250	250	250
Cadmium metal, refinery including secondary e/		1,056	1,145	1,145	1,145	1,140
Cobalt metal including alloys		602	856	800	800	600
Copper, metal refined:						
Smelter:						
Primary		141,300	237,400	242,100	296,800	273,100 3/
Secondary e/		60,000	54,800	66,000	88,600	76,000
Refined:						
Primary		270,400	252,900	247,200	315,600	297,800 3/
Secondary		361,487	339,000	369,100	355,200	375,800 r/
Iron and steel:						
Ore and concentrate:						
Gross weight		145,640	145,760	68,700	100,200 r/	200,900 3/
Fe content		20,400	20,400	960	14,600 r/	28,100 3/
Metal:						
Pig iron	thousand tons	26,969	29,923	30,012	27,722	30,939 3/
Ferroalloys 4/	do.	136	291	280	95 r/	96 3/
Of which ferrochromium	do.	16	17	16	25 r/	26 3/
Steel, crude		37,625	40,836	42,051	39,791	45,009 3/
Semimanufactures	do.	29,840	32,067	34,316	32,889	37,074 3/
Lead:						
Metal:						
Smelter		169,670	166,630	146,040	140,000	140,000
Refined:						
Primary		174,595	189,435	146,750	68,700 r/	131,000 3/
Secondary		159,561	142,249	164,400	149,400 r/	198,300 3/
Nickel, metal, refined		--	--	--	--	
Platinum-group metals, metal, refined e/	kilograms	60,000	65,000	65,000	60,000	60,000
Selenium metal	do.	120	125	120	115	100
Silver. metal, refined e/	do.	600,000	600,000	600,000	600,000	500,000
Tin metal, primary including secondary e/		17,000 r/	16,000 r/	15,000 r/	14,836 3/	15,708 3/
Uranium concentrate, U_3O_8 content		116	47	35	46 r/	27 3/
Zinc, metal including secondary		380,948	359,878	322,460	327,015	317,700 3/
INDUSTRIAL MINERALS						
Abrasives:						
Natural, pumice		647,000	504,000	300,000 r/	210,000 r/	225,000
Artificial, corundum		58,931	56,601	56,000	60,000	60,000
Barite, marketable (contained $BaSO_4$)		131,163	127,383	122,268	121,476	118,698 3/
Boron materials, processed borax, $Na_2B_4O_7$ $10H_2O$ content e/		2,000	1,500	1,500	1,500	1,200
Bromine e/		750	750	750	750	700
Cement:						
Clinker (intended for market)	thousand tons	1,110	1,160	1,200	1,100	1,200
Hydraulic	do.	36,649	40,380	37,480 r/	36,104 r/	37,000
Chalk, crude including ground	do.	440	445	450	450	425
Clays:						
Bentonite	do.	473	499	529	491	511 3/
Bleaching and fuller's earth	do.	670	498	500	500	500
Ceramic clay	do.	3,290	3,540	3,500	3,500	3,500
Fire clay	do.	1,190	1,079	1,000	1,000	1,000
Fuller's earth	do.	670	498	500	600	500
Kaolin, marketable	do.	981	1,631	1,925	1,794 r/	1,800
Other, including brick clay	do.	18,000 r/	20,000 r/	20,000 r/	21,600 r	22,000 3/

See footnotes at end of table.

TABLE 1--Continued
GERMANY: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity		1993	1994	1995	1996	1997 e/
INDUSTRIAL MINERALS--Continued						
Diatomite		7,412	1,030	--	--	--
Feldspar		416,854	379,427	329,624	359,666	455,969 3/
Fluorspar:						
Acid-grade e/		39,000	35,000	38,000	31,000	22,500
Metallurgical-grade e/		997	641	1,081	1,448	1,500
Total		39,997	35,641	39,081	32,448	24,000
Graphite, marketable		4,473	4,369	5,214	2,603	1,500
Gypsum and anhydrite, marketable	thousand tons	2,103	2,264	2,829	3,000	3,000
Lime, quicklime, dead-burned dolomite e/	do.	7,483 3/	8,511 3/	8,000	7,570 r/	7,600
Magnesium salts (byproduct of potash mining)	do.	797	818	1,000 r/	1,169 r/	1,200
Nitrogen, N content of ammonia	do.	2,100	2,170	2,518 r/	2,485 r/	2,471 3/
Phosphate materials:						
Phosphatic fertilizers, P_2O_5 content		730	750	750	750	800
Thomas slag:						
Gross weight	thousand tons	110	134	150	150	150
P_2O_5 content		16,000	19,000	19,000	19,000	19,000
Pigments, mineral, natural		7,710	7,475	5,000 r/	3,754 r/	4,176 3/
Potash:						
Crude, gross weight	thousand tons	30,610	34,621	34,000	32,558 r/	35,878 3/
Crude, K_2O content	do.	2,861	3,277	3,278	4,049 r/	4,197 3/
Marketable, K_2O content	do.	2,861	2,916	2,916	3,332 r/	3,423 3/
Pumice, marketable	do.	647	504	625	600	600
Salt, marketable:						
Evaporated	do.	558	542	617	731	700
Rock and other		12,241	12,557	14,607	15,176	15,087 3/
Sodium compounds, n.e.s.:						
Soda ash, manufactured	thousand tons	1,586	1,380	1,400	1,400	1,400
Sulfate, manufactured	do.	107	113	110	100	100
Stone, sand and gravel:						
Stone:						
Dimension, crude and partly worked	do.	198,000	200,000	200,000	200,000	100,000
Dolomite	do.	788	800	1,000	1,000	4,500
Limestone, industrial	do.	59,900	62,271	60,000	64,000	68,000
Quartz and quartzite		24,200	28,744	29,500	30,000	26,000
Slate		66,900	89,400	90,000	90,000	70,000
Sand and gravel:						
Building sand and gravel	thousand tons	213,000	244,000	250,000	300,000 r/	338,200 3/
Gravel including terrazzo splits	do.	172,000	201,000	200,000	225,000	200,000
Sand:						
Foundry	do.	2,400	3,240	3,000	3,000	4,000
Industrial (glass)	do.	5,841	5,680	7,315	5,503	9,800
Sulfur, byproduct:						
Of metallurgy e/		33,450	35,000	30,000	30,000	25,000
Of natural gas and petroleum e/		1,137,150 3/	1,200,000	1,200,000	1,000,700 3/	1,085,000 3/
Other e/		90,000	90,000	90,000	90,000	50,000
Total		1,260,600	1,325,000	1,003,468	1,000,689	1,160,000
Talc and steatite		10,502	11,538	14,170	10,005 r/	8,819 3/
MINERAL FUELS AND RELATED MATERIALS						
Asphalt and bitumen, natural		8,708	9,017	14,652	9,821	11,285 3/
Carbon black		335,000	299,000	300,000	3,000	3,000
Coal:						
Anthracite and bituminous, marketable	thousand tons	58,283	52,408	53,563	47,913	46,792 3/
Lignite	do.	221,748	207,131	192,753	187,247	177,099 3/
Coke:						
Of anthracite and bituminous coal	do.	12,100	10,919	11,000	10,662 r/	10,744 3/
Of lignite	do.	186	172	175	178 r/	185 3/
Fuel briquets:						
Of anthracite and bituminous coal	do.	585	460	379	357	322 3/
Of lignite (including dust and dried)	do.	9,933	6,849	5,011	4,896	3,539 3/

See footnotes at end of table.

TABLE 1--Continued
GERMANY: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity		1993	1994	1995	1996	1997 e/
MINERAL FUELS AND RELATED MATERIALS--Continued						
Gas:						
Manufactured:						
Blast furnace	million cubic meters	4,394	4,730	4,800	4,239 r/	4,655 3/
Coke oven	do.	2,900	2,640	2,600	2,406 r/	2,539 3/
Total	do.	7,294	7,370	7,400	6,645	7,194 3/
Natural:						
Gross	do.	20,330	20,442	21,452	23,058 r/	22,473 3/
Marketed e/	do.	17,500	18,330	19,000	21,360 r/	20,780 3/
Peat:						
Agricultural use	thousand tons	2,739	2,800	2,800	2,800	2,800
Fuel use		180,000	173,000	180,000	180,000	180,000
Petroleum:						
Crude	thousand 42-gallon barrels	22,028	21,198	21,638	20,756	20,361 3/
Refinery products:						
Liquefied petroleum gas	do.	32,800	39,500	35,287	32,352	29,208 3/
Gasoline including aviation	do.	214,000	225,000	246,660	226,058	219,311 3/
Naphtha	do.	76,100	87,300	81,736	79,058	73,925 3/
Mineral jelly and wax	do.	3,930	3,820	3,600	3,600	3,600
Kerosene and jet fuel	do.	20,600	23,000	24,258	25,691	26,000
Distillate fuel oil	do.	344,000	355,000	337,416	353,052	338,744 3/
Refinery gas	do.	3,510 r/	3,680 r/	3,600 r/	3,437 r/	2,821 3/
Lubricants	do.	4,690	4,880	4,800	4,800	4,800
Nonlubricating oils	do.	6,190	6,920	7,000	7,000	7,000
Residual fuel oil	do.	91,800	87,200	78,588	77,769	70,216 3/
Bitumen and other residues	do.	23,100	25,500	25,000	25,000	26,000
Bituminous mixtures	do.	1,100	1,170	1,200	1,200	1,200
Petroleum coke	do.	8,940	9,540	5,247	5,813	5,923 3/
Unspecified	do.	15,900	17,400	18,000	18,000	16,000
Total	do.	846,660	889,910	872,392	862,830	824,748

e/ Estimated. r/ Revised.

1/ Table contains data available through September 30, 1998.

2/ Data are from a combined Germany.

3/ Reported figure.

4/ Includes speigeleisen, unspecified crude iron, and blast furnace ferromanganese with 2% or more carbon.

TABLE 2
GERMANY: BALANCE OF PAYMENTS, SELECTED MINERAL COMMODITIES IN 1996 1/

(Thousand dollars)

Mineral commodity	Exports to EU	Imports from EU	Net gain or (loss)	Exports to the world	Imports from the world	Net gain or (loss)
Crude industrial minerals:						
Chalk	3,154	17,270	(14,116)	4,393	17,480	(13,087)
Graphite, natural	7,080	847	6,233	10,000	20,310	(10,310)
Magnesite	413	2,425	(2,012)	741	9,305	(8,564)
Other	774,054	663,248	110,806	1,028,357	1,273,991	(245,634)
Total	784,701	683,790	100,911	1,043,491	1,321,086	(277,595)
Metalliferous ores:						
Copper	7,629	58,754	(51,125)	7,788	464,035	(456,247)
Iron ore	769	152,617	(151,848)	1,246	1,208,329	(1,207,083)
Lead	--	2,347	(2,347)	--	16,585	(16,585)
Tin	--	1	(1)	12	43	(31)
Zinc	14,358	11,208	3,150	14,444	112,180	(97,736)
Other, including waste and scrap	1,620,160	909,354	710,806	2,053,785	2,760,624	(706,839)
Total	1,642,916	1,134,281	508,635	2,077,275	4,561,796	(2,484,521)
Metals:						
Iron and steel 2/	8,979,069	8,669,666	309,403	15,260,389	11,742,003	3,518,386
Mercury	413	323	90	1,466	489	977
Other nonferrous metals	110,531	86,347	24,184	203,752	357,910	(154,158)
Total	9,090,013	8,756,336	333,677	15,465,607	12,100,402	3,365,205
Mineral fuels	4,345,991	13,961,657	(9,615,666)	6,460,864	35,054,052	(28,593,188)
Nonmetallic mineral manufactures:						
Abrasives, n.e.s., grinding and polishing wheels and stones	159,841	80,229	79,612	279,663	171,139	108,524
Cement	162,022	151,383	10,639	191,089	445,349	(254,260)
Diamond: natural gem, not set or strung	42,325	123,542	(81,217)	106,485	315,631	(209,146)
Dimension stone, worked	35,947	482,420	(446,473)	66,759	604,394	(537,635)
Lime	55,760	42,074	13,686	60,685	52,770	7,915
Mica, worked including agglomerated splittings	1,574	11,625	(10,051)	4,961	20,060	(15,099)
Precious and semiprecious stones other than diamond:						
Natural	24,626	2,719	21,907	172,079	89,845	82,234
Synthetic	3,810	2,832	978	24,000	28,174	(4,174)
Total	485,905	896,824	(410,919)	905,721	1,727,362	(821,641)

1/ Table prepared by Glenn J. Wallace, International Data Unit.
2/ Excludes ferrous waste and scrap.

Source: United Nations Statistical Office (microfiche).

TABLE 3
GERMANY: EXPORTS OF SELECTED MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity		Total	Destinations: United States	Destinations: Other (principal)
METALS				
Aluminum:				
Ore and concentrate		26,552	--	Netherlands 9,961; France 3,166; Poland 3,085.
Oxides and hydroxides		539,812	55,301	Netherlands 64,890; Italy 63,067; United Kingdom 58,432.
Metal including alloys:				
Scrap		414,209	788	Italy 105,238; Netherlands 71,287; Austria 44,922.
Unwrought		260,033	7,528	Netherlands 52,936; Italy 36,520; Belgium-Luxembourg 31,205.
Semimanufactures		911,731	42,678	United Kingdom 130,296; Italy 117,878; France 95,256.
Antimony, metal including alloys, all forms		86	6	Denmark 38; Belgium-Luxembourg 10; Turkey 10.
Chromium:				
Ore and concentrate		7,130	--	Czech Republic 2,971; Poland 1,403; Sweden 650.
Oxides and hydroxides		15,366	NA	NA.
Metal including alloys, all forms		500	103	France 119, Switzerland 39; United Kingdom 32.
Cobalt:				
Ore and concentrate	value, thousands	$4	--	All to Poland.
Oxides and hydroxides		51	2	Austria 8; Netherlands 8; Sweden 5.
Metal including alloys, all forms		1,259	298	United Kingdom 227; France 197; Japan 116.
Copper:				
Ore and concentrate		14,898	--	Sweden 14,844.
Matte and speiss including cement copper		776	--	Netherlands 715; India 28; Poland 18.
Metal including alloys:				
Scrap		248,573	646	Italy 74,265; Belgium-Luxembourg 61,552; Austria 24,010.
Unwrought		269,202	9,967	China 73,317; Italy 43,924; France 26,583.
Semimanufactures		648,784	33,420	Italy 88,333; France 82,827; Austria 62,264.
Gold, metal including alloys, unwrought and partly wrought	kilograms	90,447	200	Switzerland 31,702; Italy 14,800; United Kingdom 7,700.
Iron and steel:				
Iron ore and concentrate:				
Excluding roasted pyrite		34,020	--	Belgium-Luxembourg 30,533; United Kingdom 1,250.
Pyrite, roasted		12,886	--	Switzerland 12,733.
Metal:				
Scrap	thousand tons	6,684	13	Italy 1,478; Belgium-Luxembourg 1,378; Netherlands 1,119.
Pig iron, cast iron, related materials		123,130	725	France 34,199; Italy 20,980; Belgium-Luxembourg 10,922.
Ferroalloys:				
Ferrochromium		45,426	8,625	France 10,756; Belgium-Luxembourg 5,120; Italy 4,056.
Ferromanganese		12,434	14	Austria 3,129; Belgium-Luxembourg 2,896; Netherlands 1,739.
Ferronickel		1,001	--	Republic of Korea 647; Belgium-Luxembourg 184; North Korea 81.
Ferrosilicochromium		3,719	--	Belgium-Luxembourg 2,139; Austria 525; Slovenia 351.
Ferrosilicomanganese		9,892	--	Netherlands 3,402; Belgium-Luxembourg 2,798; France 1,406.
Ferrosilicon		31,849	340	Belgium-Luxembourg 7,012; France 6,119; Austria 3,787.
Silicon metal		8,796	765	Austria 2,758; Italy 1,274; Belgium-Luxembourg 1,133.
Unspecified		26,845	777	France 5,704; Italy 4,638; Netherlands 2,524.
Steel, primary forms	thousand tons	2,254	1,138	France 236; Canada 162; Belgium-Luxembourg 150.
Semimanufactures:				
Flat-rolled products:				
Of iron or nonalloy steel:				
Not clad, plated, coated	thousand tons	6,116	395	Italy 687; France 633; Netherlands 489.
Clad, plated, coated	do.	3,181	358	France 328; Netherlands 306; United Kingdom 298.
Of alloy steel	do.	1,890	111	Belgium-Luxembourg 254; United Kingdom 202; Italy 176.
Bars, rods, angles, shapes, sections	do.	4,301	335	Netherlands 798; France 518; Belgium-Luxembourg 499.
Rails and accessories		123,917	9,971	Italy 34,279; Iran 19,618; Switzerland 16,970.
Wire		255,400	7,375	France 72,140; Netherlands 30,081; Denmark 16,949.
Tubes, pipes, fittings	thousand tons	2,444	158	Netherlands 327; France 242; United Kingdom 224.
Lead:				
Oxides		21,130	1	Sweden 4,519; Czech Republic 3,549; Netherlands 2,101.
Metal including alloys:				
Scrap		13,598	--	Netherlands 4,637; Belgium-Luxembourg 4,420; France 2,238.
Unwrought		53,785	882	Czech Republic 10,677; Austria 10,110; Netherlands 8,745.
Semimanufactures		16,701	146	Denmark 5,191; France 3,618; Belgium-Luxembourg 1,767.

See footnotes at end of table.

TABLE 3--Continued
GERMANY: EXPORTS OF SELECTED MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity		Total	Destinations: United States	Destinations: Other (principal)
METALS--Continued				
Manganese:				
Ore and concentrate, metallurgical-grade		428	1	Iran 225; Czech Republic 58.
Oxides		1,762	92	Republic of Korea 535; Slovenia 178; France 170.
Metal including alloys, all forms		6,799	133	Austria 944; Belgium-Luxembourg 749; Australia 679.
Nickel:				
Ore and concentrate		2	--	All to Turkey.
Matte and speiss	value, thousands	$5	--	Slovakia $4; France $1.
Oxides and hydroxides		1	--	All to France.
Metal including alloys:				
Scrap		7,203	1,136	Sweden 3,198; Netherlands 1,036; United Kingdom 464.
Unwrought		11,549	157	France 3,986; Belgium-Luxembourg 2,370; Italy 1,548.
Semimanufactures		13,581	3,142	Slovenia 1,512; United Kingdom 1,330; France 1,209.
Platinum-group metals:				
Waste and sweepings	value, thousands	$35,546	$290	United Kingdom $30,242; Norway $2,341.
Metals including alloys, unwrought and partly wrought	do.	$338,494	$53,118	Japan $52,259; Switzerland $46,220; United Kingdom $44,156.
Silver, metal including alloys, unwrought and partly wrought	do.	$166,757	$4,651	Italy $56,299; Spain $9,652; United Kingdom $9,004.
Tin:				
Ore and concentrate		6	--	All to Brazil.
Metal including alloys:				
Scrap		467	56	Belgium-Luxembourg 248; Netherlands 83; India 41.
Unwrought		731	39	Netherlands 171; Italy 102; Croatia 69.
Semimanufactures	value, thousands	$13,768	$410	Hungary $1,362; Finland $1,282; Switzerland $1,131.
Titanium:				
Ore and concentrate		970	2	Italy 427; France 191; Poland 115.
Oxides		46,767	12,988	Republic of Korea 2,904; China 2,727; India 2,436.
Metal including alloys, scrap and unwrought		3,220	1,231	United Kingdom 1,158; Switzerland 451.
Uranium, metal including alloys, all forms	value thousands	$581	$49	United Kingdom $226; France $203; Canada $97.
Zinc:				
Ore and concentrate		46,030	--	Sweden 42,924; Ireland 2,946.
Oxides		27,728	NA	NA.
Blue powder		9,341	7	Italy 1,692; France 1,065; Netherlands 1,091.
Metal including alloys:				
Scrap		29,044	124	Italy 7,752; Belgium-Luxembourg 7,044; Hong Kong 2,914.
Unwrought		97,863	1,171	France 18,339; Italy 14,912; United Kingdom 12,325.
Semimanufactures		35,737	NA	NA.
Zirconium, metal including alloys, scrap and unwrought		83	29	United Kingdom 22; Belgium-Luxembourg 13; Switzerland 5.
Other, waste and scrap of precious metals, n.e.s.	value, thousands	$21,185	$817	Belgium-Luxembourg $10,808; Spain $3,055; Sweden $2,712.
INDUSTRIAL MINERALS				
Abrasives, dust and powder of precious and semiprecious stones including diamond	do.	$87,504	$2,729	Ireland $34,450; Italy $11,955; Austria $8,156.
Barite and witherite		17,468	166	France 5,952; Netherlands 1,347; Austria 1,221.
Cement	thousand tons	2,272	(2/)	Netherlands 1,475; Belgium-Luxembourg 212; France 138.
Chalk		68,144	128	Netherlands 23,684; Denmark 17,649; Belgium-Luxembourg 4,373.
Clays, crude:				
Bentonite		26,021	193	Poland 11,697; Switzerland 2,670; France 2,485.
Kaolin		196,062	3	Austria 48,072; Netherlands 42,423; Italy 25,373.
Unspecified	thousand tons	2,473	(2/)	Italy 1,409; Netherlands 423; France 263.
Diamond, natural:				
Gem, not set or strung	value, thousands	$106,485	$7,909	Belgium-Luxembourg $33,366; Switzerland $13,399; Israel $12,080.
Industrial stones	do.	$5,021	$272	Switzerland $1,679; Netherlands $1,404; Japan $314.
Feldspar		61,176	99	France 23,000; Italy 14,049; Netherlands 6,939.

See footnotes at end of table.

TABLE 3--Continued
GERMANY: EXPORTS OF SELECTED MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity		Total	Destinations	
			United States	Other (principal)
INDUSTRIAL MINERALS--Continued				
Fertilizer materials:				
Crude, n.e.s.		31,253	15	France 9,308; Belgium-Luxembourg 4,763; Switzerland 4,343.
Manufactured:				
Ammonia		530,521	24,683	United Kingdom 147,806; France 110,574; Belgium-Luxembourg 86,190.
Nitrogenous	thousand tons	2,498	17	Spain 230; Italy 215; France 212.
Phosphatic		48,450	8	Netherlands 15,768; France 15,050; United Kingdom 4,856.
Potassic	do.	4,707	93	Belgium-Luxembourg 1,019; Brazil 648; United Kingdom 334.
Unspecified and mixed		654,249	353	France 48,817; United Kingdom 13,308; unspecified 539,145.
Fluorspar		238,905	--	South Africa 98,099; China 80,386; Kenya 31,398.
Graphite, natural		9,493	61	Netherlands 1,589; France 1,411; Austria 1,194.
Gypsum and plaster	thousand tons	1,111	(2/)	Belgium-Luxembourg 299; United Kingdom 189; France 129.
Lime		644,755	27	Netherlands 407,348; France 99,570; Belgium-Luxembourg 42,823.
Magnesium compounds, oxides and hydroxides		69,346	9	France 35,950; Austria 20,196; United Kingdom 2,153.
Phosphates, crude		217	2	Austria 100; Nigeria 82; Macedonia 16.
Pigments, mineral, iron oxides and hydroxides, processed		123,733	NA	NA.
Precious and semiprecious stones other than diamond:				
Natural	value, thousands	$172,079	$34,447	Switzerland $34,311; Hong Kong $29,728; Japan $24,967.
Synthetic	do.	$4,696	$80	Philippines $1,650; Spain $796; France $614.
Salt and brine	do.	2,852	1	Belgium-Luxembourg 1,167; Czech Republic 367; Sweden 361.
Sodium compounds, n.e.s., soda ash		605,495	29	France 60,975; Netherlands 55,114; Denmark 36,858.
Stone, sand and gravel:				
Dimension stone:				
Crude and partly worked		162,335	221	Switzerland 103,021; Netherlands 26,744; Italy 5,948.
Worked		80,103	1,585	Belgium-Luxembourg 18,194; Netherlands 13,136; Switzerland 9,719.
Dolomite, chiefly refractory-grade		281,967	96	Belgium-Luxembourg 136,356; Netherlands 74,846; France 36,563.
Gravel and crushed rock	thousand tons	12,958	1	Netherlands 9,557; Switzerland 1,009; France 583.
Limestone other than dimension		78,596	--	Netherlands 39,524; Belgium-Luxembourg 28,448; Switzerland 7,897.
Quartz and quartzite		65,998	365	Netherlands 13,248; Belgium-Luxembourg 10,486; Switzerland 4,637.
Sand other than metal-bearing	thousand tons	7,714	1	Portugal 5,649; Belgium-Luxembourg 1,273; Switzerland 397.
Sulfur, elemental, crude including native and byproduct		969,429	87,456	Belgium-Luxembourg 183,191; Brazil 111,000; United Kingdom 110,096.
Talc, steatite, soapstone, pyrophyllite		6,099	7	Slovenia 936; Denmark 718; Hungary 695.
MINERAL FUELS AND RELATED MATERIALS				
Carbon black		116,915	3,116	France 31,580; Belgium-Luxembourg 17,412; Austria 12,243.
Coal:				
Anthracite		539,499	--	Belgium-Luxembourg 205,558; France 149,856; United Kingdom 123,831.
Bituminous		377,438	--	Belgium-Luxembourg 357,465; Switzerland 16,213; Austria 2,975.
Briquets of anthracite and bituminous coal		132,804	--	France 78,905; United Kingdom 43,065.
Lignite including briquets		544,460	--	Belgium-Luxembourg 212,541; France 73,121; Netherlands 35,016.
Coke and semicoke		194,180	21	Netherlands 47,891; France 25,242; Norway 24,979.
Peat including briquets and litter	thousand tons	1,836	71	Netherlands 938; France 215; Italy 177.
Petroleum:				
Crude	do.	1,090	--	Netherlands 456; United Kingdom 199; Sweden 157.
Refinery products:				
Liquefied petroleum gas		495,239	--	Austria 61,665; Poland 49,306; United Kingdom 45,223.
Gasoline, motor	thousand tons	3,593	80	Switzerland 1,188; Netherlands 628; France 399.
Mineral jelly and wax		217,636	14	Netherlands 23,699; France 14,741; Belgium-Luxembourg 13,897.
Kerosene and jet fuel	thousand tons	1,930	(2/)	Sweden 175; Switzerland 34; bunkers 1,608.
Distillate fuel oil	do.	3,491	60	France 882; Austria 739; Switzerland 521.

See footnotes at end of table.

TABLE 3--Continued
GERMANY: EXPORTS OF SELECTED MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity	Total	Destinations	
		United States	Other (principal)
MINERAL FUELS AND RELATED MATERIALS--Continued			
Petroleum--Continued:			
Refinery products--Continued:			
Lubricants	483,535	1,492	Austria 77,313; Belgium-Luxembourg 63,371; Netherlands 37,348.
Residual fuel oil	4,155	598	Sweden 1,191; United Kingdom 540; Netherlands 417.
Bitumen and other residues	504,444	--	Netherlands 118,701; Austria 91,431; Switzerland 78,759.
Bituminous mixtures	38,002	325	Switzerland 9,188; Austria 4,697; Czech Republic 4,649.
Petroleum coke	509,304	30	Netherlands 150,027; France 119,008; Slovakia 53,211.

NA Not available.
1/ Table prepared by Virginia Woodson.
2/ Less than 1/2 unit.

Source: United Nations Statistical Office (microfiche).

TABLE 4
GERMANY: IMPORTS OF SELECTED MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity		Total	Destinations	
			United States	Other (principal)
METALS				
Aluminum:				
Ore and concentrate	thousand tons	1,355	(2/)	Guyana 555; Guinea 344; China 133.
Oxides and hydroxides		929,267	10,950	Jamaica 340,098; Spain 150,760; Hungary 107,126.
Metal including alloys:				
Scrap		259,669	260	Netherlands 61,061; Italy 26,100; Switzerland 20,233.
Unwrought	thousand tons	1,109	1	Norway 246; Netherlands 149; Canada 103.
Semimanufactures		640,103	8	France 93,964; Austria 57,283; Italy 57,024.
Antimony, metal including alloys, all forms		592	12	China 327; Russia 130; Kyrgyzstan 48.
Chromium:				
Ore and concentrate		177,938	29	South Africa 128,969; Turkey 44,663.
Oxides and hydroxides		7,723	1,360	Kazakstan 1,816; Poland 1,552; Italy 1,547.
Metal including alloys, all forms		1,480	67	Russia 372; Belgium-Luxembourg 317; France 285.
Cobalt:				
Ore and concentrate		177,938	29	South Africa 128,969; Turkey 44,663.
Oxides and hydroxides		346	(3/)	Finland 139; Belgium-Luxembourg 71; Netherlands 47.
Metal including alloys, all forms		2,507	17	South Africa 559; Russia 392; Congo (Brazzaville) 202.
Copper:				
Ore and concentrate		689,055	10	Chile 210,629; Portugal 155,263; Indonesia 131,521.
Matte and speiss including cement copper		12,202	92	Australia 10,007; United Kingdom 664; Morocco 552.
Metal including alloys:				
Scrap		427,249	1,698	Russia 130,894; Netherlands 48,270; France 28,441.
Unwrought		574,194	1,797	Russia 246,985; Chile 98,329; Poland 44,354.
Semimanufactures		373,954	2,444	France 100,612; Belgium-Luxembourg 77,150; Italy 37,040.
Gold:				
Waste and sweepings	value, thousands	$160,727	$2,089	Sweden $22,815; Eritrea $18,812; Norway $14,640.
Metal including alloys, unwrought and partly wrought	kilograms	94,890	2,000	United Kingdom 31,700; Canada 14,800; Switzerland 12,100.
Iron and steel:				
Iron ore and concentrate:				
Excluding roasted pyrite	thousand tons	39,303	(2/)	Canada 5,515; Brazil 5,351; Sweden 5,162.
Pyrite, roasted		71,484	--	Norway 67,500; Netherlands 3,984.
Metal:				
Scrap	thousand tons	1,335	4	Czech Republic 270; Denmark 213; Netherlands 167.
Pig iron, cast iron, related materials		330,788	1,161	Czech Republic 58,078; Canada 45,774; Brazil 40,468.

See footnotes at end of table.

TABLE 4--Continued
GERMANY: IMPORTS OF SELECTED MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity		Total	Destinations: United States	Destinations: Other (principal)
METALS--Continued				
Iron and steel-- continued:				
Ferroalloys:				
Ferrochromium		339,641	412	South Africa 156,461; Norway 44,449; Zimbabwe 35,291.
Ferromanganese		152,090	193	France 54,975; South Africa 22,963; Norway 17,873.
Ferronickel		77,681	4	Domican Republic 19,163; Greece 18,151; Brazil 9,042.
Ferrosilicochromium		18,711	--	Zimbabwe 5,219; Russia 4,366; Ukraine 1,013.
Ferrosilicomanganese		121,775	--	China 32,300; Norway 24,545; Romania 21,208.
Ferrosilicon		179,526	231	Norway 92,142; Slovakia 17,024; Poland 11,758.
Silicon metal		95,901	87	Norway 42,999; France 15,385; Canada 11,702.
Unspecified		55,218	1,887	France 12,849; Russia 6,493; Brazil 5,657.
Steel, primary forms		998,893	196	Belgium-Luxembourg 379,996; United Kingdom 116,600. Netherlands 101,174.
Semimanufactures:				
Flat-rolled products:				
Of iron or nonalloy steel:				
Not clad, plated, coated	thousand tons	4,656	1	Belgium-Luxembourg 1,026; Netherlands 554; Austria 384.
Clad, plated, coated	do.	2,093	37	Belgium-Luxembourg 558; France 524; Austria 450.
Of alloy steel		671,217	2,502	France 157,631; Sweden 115,944; Belgium-Luxembourg 93,428.
Bars, rods, angles, shapes, sections	thousand tons	4,790	12	France 870; Italy 816; Czech Republic 537.
Rails and accessories		90,180	35	Poland 64,789; Czech Republic 7,194; United Kingdom 5,274.
Wire		504,198	789	France 108,350; Czech Republic 95,672; Belgium-Luxembourg 76,160.
Tubes, pipes, fittings	thousand tons	1,624	6	Italy 406; Czech Republic 153; France 145.
Lead:				
Ore and concentrate		48,673	5,618	Canada 17,707; Poland 9,961; Sweden 4,686.
Oxides		15,329	10	France 4,779; unspecified 9,101.
Metal including alloys:				
Scrap		8,707	--	Switzerland 1,643; Austria 1,428; Hungary 983.
Unwrought		126,582	4,570	Belgium-Luxembourg 26,655; United Kingdom 24,481; France 23,135.
Semimanufactures		8,949	12	United Kingdom 3,556; Belgium-Luxembourg 3,243; France 308.
Manganese:				
Ore and concentrate, metallurgical grade		12,717	--	South Africa 2,648; Morocco 2,613; Australia 2,242.
Oxides		6,567	332	Ireland 1,800; Belgium-Luxembourg 1,427; Japan 826.
Metal including alloys, all forms		18,665	66	China 7,770; Ukraine 4,379; South Africa 3,318.
Nickel:				
Ore and concentrate		2	--	Brazil 1, Norway 1
Matte and speiss		40	--	All from United Kingdom.
Oxides and hydroxides		9,277	--	Russia 6,715; Canada 2,562.
Metal including alloys:				
Scrap		10,474	712	Russia 3,080; France 2,053; Lithuania 1,069.
Unwrought		61,423	110	Russia 27,239; Australia 7,500; Norway 6,687.
Semimanufactures		9,275	1,356	France 2,810; Slovenia 1,182; Austria 940.
Platinum-group metals:				
Waste and sweepings	value, thousands	$176,296	$37,973	Switzerland $14,067; Croatia $11,701; Czech Republic $10,408.
Metals including alloys, unwrought and partly wrought	do.	$435,472	$53,129	South Africa $142,774; Switzerland $71,661; Russia $48,649.
Silver, metal including alloys, unwrought and partly wrought	do.	$181,391	$9,273	United Kingdom $37,373; Poland $33,439; France $31,390.
Tin:				
Ore and concentrate		177	--	Rwanda 173; United Kingdom 4.
Metal including alloys:				
Scrap		248	6	Austria 49; Czech Republic 37; Netherlands 35.
Unwrought		20,387	678	China 9,648; Russia 2,832; Indonesia 2,503.
Semimanufactures		623	8	Netherlands 421; France 79; Belgium-Luxembourg 51.
Titanium, metal:				
Oxides		21,983	789	Slovenia 7,034; Belgium-Luxembourg 5,689; France 3,133.
Ore and concentrate		593,300	7,794	Canada 220,965; Norway 196,557; South Africa 79,870.
Metal including alloys:				
Scrap and unwrought		6,369	23	Switzerland 218; United Kingdom 178; unspecified 5,002.
Semimanufactures		1,606	549	France 289; Russia 175; Italy 172.

See footnotes at end of table.

TABLE 4--Continued
GERMANY: IMPORTS OF SELECTED MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity		Total	Destinations	
			United States	Other (principal)
METALS--Continued				
Uranium, metal including alloys, all forms	value, thousands	$44,135	--	United Kingdom $14,386; Russia $6,325; Canada $6,012.
Zinc:				
Ore and concentrate		439,315	55,506	Canada 192,890; Peru 51,646; Australia 42,495.
Oxides		18,539	34	Netherlands 7,326; United Kingdom 1,910; Poland 1,740.
Blue powder		7,946	1	Belgium-Luxembourg 5,630; Norway 1,467.
Metal including alloys:				
Scrap		10,021	--	France 5,330; Netherlands 887; Belgium-Luxembourg 408.
Unwrought		240,746	1	Belgium-Luxembourg 88,064; Netherlands 34,001; Norway 33,837.
Semimanufactures		63,196	7,218	France 20,694; Netherlands 9,044; Slovenia 8,237.
Other:				
Ores and concentrates of precious metals, n.e.s.	value, thousands	$115,445	--	South Africa $104,305; Sweden $5,878; Finland $5,247.
Waste of precious metals, n.e.s.	do.	$403,086	$85,015	Chile $131,144; Philippines $55,442; Singapore $11,682.
INDUSTRIAL MINERALS				
Abrasives, n.e.s., dust and powder of precious and semiprecious stones including diamond	do.	$69,703	$18,846	Ireland $40,936; Italy $3,055.
Barite and witherite		203,474	(2/)	China 63,632; France 54,294; Bulgaria 37,197.
Cement	thousand tons	7,444	(2/)	Poland 3,284; Czech Republic 1,205; Belgium-Luxembourg 804.
Chalk		200,104	19	France 96,130; Belgium-Luxembourg 53,309; Denmark 20,181.
Clays, crude:				
Bentonite		164,547	18,019	Greece 46,439; Italy 18,497; Netherlands 13,132.
Kaolin		633,465	138,775	United Kingdom 216,587; Czech Republic 111,866; Brazil 53,208.
Unspecified		331,467	63,333	Czech Republic 89,572; France 44,920; United Kingdom 31,500.
Diamond, natural:				
Gem, not set or strung	value thousands	$315,631	$9,200	Belgium-Luxembourg $121,104; Israel $75,345; Russia $29,132.
Industrial stones	do.	$8,043	$449	Belgium-Luxembourg $1,971; Switzerland $1,165; South Africa $847.
Feldspar		130,512	35	Norway 85,951; Italy 15,269; Finland 10,442.
Fertilizer materials:				
Crude, n.e.s.		14,390	270	Netherlands 6,549; Belgium-Luxembourg 3,971; Austria 1,299.
Manufactured:				
Ammonia		212,974	(3/)	Russia 90,118; Netherlands 38,649; Czech Republic 22,203.
Nitrogenous	thousand tons	4,258	2	Netherlands 1,430; Belgium-Luxembourg 663; Czech Republic 420.
Phosphatic		223,218	--	Belgium-Luxembourg 125,614; Netherlands 55,886; Russia 31,296.
Potassic		110,644	192	Israel 74,890; France 23,381; Netherlands 8,335.
Unspecified and mixed	thousand tons	1,394	12	Netherlands 301; Russia 223; Belgium-Luxembourg 166.
Fluorspar		238,905	--	South Africa 98,099; China 80,386; Kenya 31,398.
Graphite, natural		41,346	474	China 15,408; Madagascar 4,540; Ukraine 3,609.
Gypsum and plaster		276,408	1,317	France 158,557; Austria 48,490; Netherlands 23,276.
Lime		700,752	--	France 278,886; Belgium-Luxembourg 190,744; Czech Republic 152,933.
Magnesium compounds:				
Magnesite, crude		26,015	1,092	Spain 3,664; Greece 3,062; Netherlands 933.
Oxides and hydroxides		523,865	23,685	China 147,926; Netherlands 68,901; Austria 49,521.
Phosphates, crude		257,536	7,385	Israel 133,550; Russia 71,955; Algeria 19,579.
Precious and semiprecious stones other than diamond, natural	value, thousands	$89,845	$5,352	Thailand $23,384; Brazil $15,557; India $7,619.
Pyrite, unroasted		163,293	--	Finland 160,532; Italy 2,129.
Quartz crystal, piezoelectric	value, thousands	$14,163	$5,666	Japan $6,425; Russia $647; United Kingdom $634.
Salt and brine	do.	1,674	(2/)	Netherlands 1,520.
Sodium compounds, n.e.s., sulfate, natural and manufactured		70,658	1	Belgium-Luxembourg 29,464; Austria 18,060; Spain 12,438.
Stone, sand and gravel:				
Dimension stone:				
Crude and partly worked		505,757	2,025	Norway 128,379; India 70,704; France 64,609.
Worked	thousand tons	1,530	1	Italy 396; Poland 219; Portugal 213.

See footnotes at end of table.

TABLE 4--Continued
GERMANY: IMPORTS OF SELECTED MINERAL COMMODITIES IN 1996 1/

(Metric tons unless otherwise specified)

Commodity		Total	Destinations	
			United States	Other (principal)
INDUSTRIAL MINERALS--Continued:				
Stone, sand and gravel-- continued:				
Dolomite, chiefly refractory-grade		567,185	7	Latvia 289,283; Belgium-Luxembourg 94,397; Denmark 83,561.
Gravel and crushed rock	thousand tons	18,858	325	Norway 4,861; Poland 4,212; France 3,719.
Limestone other than dimension	do.	1,913	(2/)	Poland 1,047; Austria 473; France 179.
Quartz and quartzite		40,839	223	Netherlands 20,332; Belgium-Luxembourg 6,337; Austria 5,113.
Sand other than metal-bearing	thousand tons	3,608	5	France 1,840; Netherlands 1,107; Poland 342.
Talc, steatite, soapstone, pyrophyllite		226,137	4,343	Finland 62,911; Austria 58,944; France 31,455.
Vermiculite, perlite, etc.		114,959	1,643	Greece 82,373; South Africa 12,914; Hungary 9,270.
MINERAL FUELS AND RELATED MATERIALS				
Carbon black		101,944	5,795	France 34,954; Netherlands 18,046; Hungary 10,679.
Coal:				
Anthracite		258,966	793	Netherlands 47,562; Belgium-Luxembourg 45,265; Russia 43,816.
Bituminous	thousand tons	14,846	1,905	South Africa 5,635; Poland 3,074; Colombia 2,011.
Briquets of anthracite and bituminous coal		111,390	159	France 44,204; Colombia 29,389; Netherlands 18,512.
Lignite including briquets	thousand tons	2,559	--	Czech Republic 2,332; Poland 127.
Coke and semicoke	do.	3,263	263	Poland 1,027; Czech Republic 471; China 303.
Gas, natural, gaseous	do.	66,932	NA	NA.
Peat including briquets and litter		314,149	--	Estonia 107,355; Latvia 57,180; Netherlands 56,674.
Petroleum:				
Crude	thousand tons	103,542	8	Russia 25,541; Norway 22,137; United Kingdom 18,086.
Refinery products:				
Liquefied petroleum gas	do.	915,102	284	Netherlands 268,630; Norway 225,132; Belgium-Luxembourg 189,567.
Gasoline, motor	do.	11,650	25	Netherlands 6,810; France 1,281; Belgium-Luxembourg 1,196.
Mineral jelly and wax		343,994	44,803	Netherlands 51,216; France 48,052; Malaysia 18,425.
Kerosene and jet fuel	thousand tons	2,778	18	Netherlands 2,228; Belgium-Luxembourg 276; France 120.
Distillate fuel oil	do.	19,913	88	Netherlands 10,048; Sweden 2,046; Russia 1,841.
Lubricants		438,828	7,576	France 128,912; Netherlands 98,989; Belgium-Luxembourg 47,091.
Residual fuel oil	thousand tons	3,559	(2/)	Netherlands 1,018; Belgium-Luxembourg 968; Russia 391.
Bitumen and other residues		590,680	645	Belgium-Luxembourg 251,229; Czech Republic 162,582; France 87,550.
Bituminous mixtures		15,882	222	Switzerland 5,406; Netherlands 4,390; Belgium-Luxembourg 2,563.
Petroleum coke	thousand tons	1,135	896	United Kingdom 94; Argentina 29.

1/ Table prepared by Virginia Woodson.
2/ Less than 1/2 unit.
3/ Unreported unit valued at less than $10,000.

Source: United Nations Statistical Office (microfiche).

TABLE 5
GERMANY: STRUCTURE OF THE MINERAL INDUSTRY FOR 1997

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Alumina		VAW Aluminium AG	Plant at Schwandorf (special aluminas)	430
Do.		Aluminium Oxid Stade GmbH (VAW, 50%)	Plant at Stade	750
Do.		Martinswerke GmbH (Alusuisse, 100%)	Plant at Bergheim (fused alumina)	350
Aluminum		VAW Aluminium AG	Smelters at Innwerke at Töging, Elbewerke at Stade, Rheinwerke at Neuss, Lippenwerke at Lünen (secondary)	300
Do.		Aluminium Essen GmbH	Smelter at Essen-Borbeck	95
Do.		Hamburger Aluminium-Werke GmbH (VAW, 33%)	Smelter at Hamburg	120
Bentonite		Süd-Chemie AG	Mines at Gammelsdorf, upper Bavaria	450
Do.		Do.	Plants at Mooseburg and Kelheim, upper Bavaria	350
Cement		38 companies, the major ones are:	64 mills (grinding) including:	59,000
Do.		Heidelberger Zement AG	Plants at Blaubeuren-Schelklingen, Leimen, Hassmersheim, Burglengenfeld, Kieferssfelden, and others	(9,200)
Do.		Dyckerhoff AG	Plants at Amoneburg, Golheim, Neuwied, Neubeckum, and others	(7,250)
Do.		E. Schwenk, Zementwerke KG	Plants at Allmendingen, Karlstadt, and Mergelstetten	(6,000)
Do.		Anneliese Zementwerke AG	Plants at Ennigerloh-Nord, Ennigerloh-Sud, Geske, and Paderborn	(3,500)
Do.		Zementwerke Deunan GmbH	Plant at Deuna	(3,000)
Chalk		Kreidewerke Rugen GmbH	Quarries on Rugen Island	500
Coal, anthracite and bituminous		Four companies:	About 27 mines, including:	72,500,
Do.		Ruhrkohle AG	14 mines in Ruhr region	(40,000)
Do.		Saarbergwerke AG	5 mines in Saar basin	(14,000)
Do.		Preussag Anthrazit GmbH	Mine at Ibbenbüren	(2,500)
Copper		Norddeutsche Affinerie AG (Inmet Mining, 35%; M.I.M. Holdings, 35%; Degussa AG, 30%)	Smelter and refinery, both at Hamburg	290 350
Do.		Hüttenwerke Kayser AG	Refinery at Lünen	120
Graphite		Graphitwerk Kropfmühl AG	Mine at Kropfmül	8
Do.		Do.	Plant at Kropfmül	20
Gypsum		Gebr. Knauf Westdeutsche Gipswerke GmbH	Mines at Iphofen, Neuherberg and Velhey	650
Do.		Do.	Plants at Iphofen, Lauffin, Neumorcher,and Statoldendorf	1,000
Kaolin		Kemmlitzer Kaolinwerke GmbH	Mines at Gröppendorf, Oschatz, and Sachsen	100
Do.		Do.	Plant at Sachen	100
Limestone		Harz Kalk GmbH	Quarries at Bad Kösen, Rubelaand, and Kaltes Tal	6,000
Lead		Metaleurop Weser Blei GmbH	ISA refinery at Nordenham Primary and secondary smelter at Nordenham	90 120
Do.		Berzelius Metallhütten GmbH	QSL smelter at Stolberg	75
Do.		do.	Refinery at Duisberg	120
Do.		Norddeutsche Affinerie AG	Refinery at Hamburg	50
Lignite		Rheinische Braunkohlenwerke AG (Rheinbraun)	Surface mines in Rhenish mining area: Garzweiler, Bergheim, Inden, and Hambach	105,000
Do.		Lausitzer Braunkohle AG (LAUBAG)	Surface mines in Lausatian mining area: Jänschwalde/ Cottbus-Nord, Welzow-Süd, and Nochten/Reichswalde	50,000
Natural gas	million cubic meters	Brigitta Erdgas und Erdöl GmbH and Elwerath Erdgas-Erdöl GmbH	Plants at Clenze and Grossenkmeten	9,500
Do.	do.	Mobil Erdgas-Erdöl GmbH	Plants at Scholen	4,000
Do.	do.	Other companies	Plants at Duste, Rutenbrock, and others	2,000
Petroleum:				
Crude	thousand 42-gallon barrels	The largest companies were:	6 areas with about 85 oilfields, including:	80,000
Do.	do.	Elwerath Erdgas-Erdöl GmbH	West of Ems River	(30,000)
Do.	do.	Wintershall AG	Weser-Ems Rivers	(21,000)
Do.	do.	Deutsche Texaco AG	Elbe-Weser Rivers	(20,000)
Refined	do.	About 25 companies, of which the largest were:	20 refineries, including:	2,062,000
Do.	do.	Deutsche Shell AG	Refineries at Godorf, Hamburg, and Grasbrook	(256,000)
Do.	do.	Esso AG	Refineries at Karlsruhe and Ingolstadt	(245,000)
Do.	do.	Ruhr Oel AG	Refinery at Gelsenkirchen	(215,500)
Do.	do.	Erdoel Raffinerie Neustadt GmbH	Refinery at Neustadt-Donau	(145,000)
Potash		Kali und Salz AG	Mines at Bergmannssegen-Hugo, Niedersachen-Riedel, Salzdetfurth, Sigmundshall, Hattorf, Neuhof-Ellers, and Wintershall	4,000 K_2O
Do.		MDK (Mitteldeutsche Kali und Sondershausen)	10 mines mostly in the State of Thüringen	2,500 K_2O

TABLE 5--Continued
GERMANY: STRUCTURE OF THE MINERAL INDUSTRY FOR 1997

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Salt (rock)	Kali und Salz AG	Mines at Bad Friedrichshall-Kochendorf, Braunschweig-Luneburg, Heilbronn, Riedel, Stetten, and Wesel (Borth)	15,000
Steel	Major companies including:	About 25 plants, including:	45,000
Do.	Thyssen Stahl AG	Plants at Krefeld, Duisburg, Hattungen, Oberhausen and Written	(13,000)
Do.	Fried. Krupp AG Hoesch-Krupp	Plants at Bochum, Dortmund, and Rheinhausen	(9,000)
Do.	Stahlwerke Peine-Salzgitter AG	Plants at Peine and Salzgitter	(4,500)
Do.	Klöckner-Werke AG	Plants at Bremen and Osnabruck	(4,200)
Do.	Preussag Stahl AG	Plant at Peine	(750)
Zinc	Ruhr-Zink GmbH	Refinery at Datteln	200
Do.	Berzelius Metallhütten GmbH	Imperial smelter and fire refinery at Duisburg	100
Do.	Metaleurop Weser Zink GmbH	Refinery at Nordenham	130